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P A P E R S

IN

M A N U F A C T U R E S.

The GOLD MEDAL of the Society was this session voted to Mr. WILLIAM CORSTON, of Ludgate-Hill, for a substitute, of his invention, for LEGHORN PLAIT, for HATS, &c.

The following Communications were received from him, and specimens of the RYE-STRAW and of the PLAIT made therewith were placed in the Society's Repository.

GENTLEMEN,

I BEG leave to lay before your Society, two specimens of a manufacture which was never before made in this country, and for the purchase of which a very considerable sum is annually remitted to Italy, Germany, &c. It is called Leghorn-plait, and is made use of for ladies' and gentlemen's hats.

The annual importation, as entered at the custom-house for the last ten years, would

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would furnish employment for five thousand female children and young women ; and give cultivation to two thousand acres annually of very poor land to raise the straw, unfit for other culture. The two specimens sent were plaited at a school I have at Fincham, in Norfolk ; and the straw is part of the produce of five acres I sowed last year in that county. I should feel happy to communicate every information respecting it that your Society may require ; and if you, Gentlemen, should on investigation deem it entitled to an honorary reward, such a mark of your distinction I should feel proud to receive. I have been three years in bringing it to its present state of perfection, and I now trust it will not only prove of public advantage to this country, by preventing many thousand pounds a year being sent abroad, but will also be the means of diffusing private happiness to some hundreds of poor families, by
the

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the healthy and productive employment
it will afford their children.

I remain, respectfully,

Gentlemen,

Your humble servant,

WILLIAM CORSTON.

Ludgate-hill, Dec. 17th, 1804.

To the SOCIETY of ARTS, &c.

An

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An account of the quantity of Straw Hats imported into Great Britain in the last ten years, distinguishing each year and the countries from whence imported:

	Denmark.	Germany.	Flanders.	France.	Gibraltar.	Italy.
	Doz. No.	Doz. No.	Doz. No.	Doz. No.	Doz. No.	Doz. No.
1794	360..0	.....	.....	.....	3702..2
1795	1165..0	.....	.....	.....	3696..0
1796	1455..0	.....	.....	314..8	1010..6
1797	3128..0	.....	1..4	.....	240..0
1798	4499..2	.....	.....	.....	.....
1799	6615..6	.....	.....	.....	400..6
1800	9718..6	.....	.....	.....	1602..1
1801	3129..8	.....	.....	.....	235..10
1802	2955..6	.....	.....	.....	6831..10
1803	1514..11	320..0	.....	.....	.....	12237..7
Total.	1514..11	32986..4	360..0	1..4	314..8	29956..6

Total Number, 65,133 dozen and 9.

Plait for Hats.

1800..	Nil.
1801..	779lb.
1802..	2396lb.
1803..	2106lb.

5281lb.

Inspector-General's Office, Custom-House, London,

July 7th, 1804.

W. IRVING, Inspector-General.

At five hats to a pound, 5281lb. will make 26405 Hats.

Add the dozens above-mentioned.....

Total Hats 808010

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GENTLEMEN,

PRESUMING on a hope that the particulars of my experiment, and a slight view of the advantages which this new branch of industry opens to this country, may meet with attention from those who alone can patronize and forward its establishment; allow me to subjoin the result of an experiment upon part of five acres of rye sown last year, in Norfolk, on a poor and sandy soil, with two bushels of seed per acre; it was the third year of my attempting to produce the Leghorn-plait, from the growth of the seed of this country. I feel happy that I can now (after much trouble and expense) lay before you for inspection, specimens, made up in hats, both knitted and sewed, accompanied by the signatures of many respectable tradesmen in London, who have dealt in that article some of them ten, twenty, and thirty years, and could not discover the difference from the Italian Leghorn; and if

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if it be honoured with your approbation, it will strengthen my hope of seeing the waste land of this country rendered subservient to the industry of its poor, as well as to the national prosperity, by distributing at home the large sum which is at present annually remitted to a foreign market.

I selected two square yards from the thickest part of the crop, and likewise two from the thinnest ; it was all pulled up by the roots ; I tied them together, and again repeated the same. I manufactured one bundle at my school at Fincham, in Norfolk, the other at my house in Ludgate-street; and averaging both experiments, the produce was as follows, from four square yards.—The bundle measured ten inches in circumference, and weighed one pound with the seed ; the straw was of four different sizes, the finest not measuring more than fifteen inches in length, the coarsest only twenty-four, including the root

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root and ear. The part used in plaiting produced ten yards of Leghorn, of four different qualities, and the weight was one ounce; the grain, or seed, measured one-third of a pint, and weighed five ounces, the refuse straw eight ounces; the waste was two ounces in the four square yards. By this calculation, one acre will produce forty pieces of Leghorn of fifty-five yards in length, and employ for one week thirteen children to sort the straw, and eighty to plait it; and, allowing them four shillings each, the acre will furnish £18. 12s. 0d. in amount of labour bestowed on the produce.

The Right Honourable George Rose has obligingly favoured me with the annual account of imports for the last ten years, up to Christmas, 1803; they amount to 83 cases per annum, but the last year there was 180 cases imported; 83 cases contain 79,680 Leghorn hats to manufacture, which quan-

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tity in this country, would annually require the cultivation of 2,000 acres of waste land, and furnish employment for nine months in the year for 5,000 female children, from seven to fifteen years of age; their industry averaged at 4s. per week, would amount to £36,000. I have not noticed the number of hands that will be required to make up the hats, nor those employed in the cultivation of the land. I am indebted to the Honourable Mrs. Harcourt, for having procured for me three acres of Bagshot Heath; the General's steward has sown it for me with the rye-seed that grew on the five acres alluded to in Norfolk, and he has no doubt but it will answer the purpose.

I remain, Gentlemen,

Your humble servant,

WILLIAM CORSTON.

Ludgate-street, January 28th, 1805.

To the SOCIETY of ARTS, &c.

We

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We hereby certify that Mr. Wm. Corston, of Ludgate-hill, has exhibited to us a specimen of plaited straw, manufactured by him in this country, similar to that imported from various parts of Europe, under the denomination of Leghorn. We have examined this specimen, and the hat made of the same article, and candidly confess we thought it Leghorn, until informed to the contrary.

J. J. Valloton, *Jermyn-street*
Joseph Robson, *Coventry-street*
Davies and Wain, *Sackville-street*
G. and R. Thompson, *Cockspur-street*
Harding, Shorland, and Co. *Pall-Mall*
Samuel Barlow, *Jermyn-street*
Walter Gladhill, *Jermyn-street*
Richard Cotton, *Duke-street*
Welchman and Masters, *Ditto*
E. Wheattall, *Ditto*
James Senier, *Bruton-street*
Thomas Smith, *New Bond-street*
Beamon and Abbott, *Bond-street*
W. Absalom, *Green-street*
Guidon and Hughes, *Golden-square*
George Sneath, *Duke-street, St. James's*
Morice and Penny, *Ludgate-hill*
Wells, Gilgrest, and Neville, *Fleet-street*
Middleton and Innes, *Ditto*
Richard Fisher and Son, *Ditto*

GENTLEMEN,

SINCE I had the honour, last Spring, of communicating to you my ideas on the benefits to be derived from the encouragement of the growth of rye-straw, for the purpose of making British hats resembling Leghorn, I have been enabled to prove the result of my experiment on Bagshot Heath. The Honourable General Harcourt has now the first hat made from the rye-straw grown on that barren waste, which is well calculated to produce it.

I cannot help expressing a wish that Government would set the example, by causing 1000 acres of the Heath to be cultivated ; and when it is considered that the consumption is equal to the annual cultivation of 2000 acres, and the employment of 5000 poor children, I should humbly conceive it deserves the experiment. I am Gentlemen,

Your obedient servant,

WILLIAM CORSTON.

Ludgate-hill, December 2d, 1805.

To the SOCIETY OF ARTS, &c. The

The SILVER MEDAL and FORTY GUINEAS were this Session voted to Mr. JOSEPH BEARD, of Coggeshall, in Essex, for a MACHINE for CUTTING and CROOKING WIRES for CARDS, employed in carding Cotton and Wool.

The following COMMUNICATIONS were received relative to this business, and a complete MACHINE, which makes two WIRES at once, is placed in the Society's Repository for public inspection, it being difficult to explain by an Engraving the construction of this ingenious Machine. A pair of cards made with the wires formed by this Engine are reserved,

SIR,

A NEIGHBOUR of mine, who for six or seven years has been exerting his mechanical talents, hath completed an engine for doubling, cutting,

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and crooking of wire for cards, and I suppose it not to be equalled in any part of the world; it differs entirely from one I sent to the Society some years ago, invented by Mr. Kay, which cut only one wire at a time, and required a person to feed it; this cuts two at once, and on a more extensive plan will cut any number desired.

A child of eight or nine years old may work it with ease. If the Society would wish to see it, the inventor will attend them with the machine.

I am, Sir,

Your humble servant,

RICHARD APPLETON.

Coggeshall, October 1st, 1804.

CHARLES TAYLOR, Esq.

SIR,

WITH this you will receive an engine of my invention, for cutting and crooking wires for cards, and hope

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hope you will be satisfied with its utility. I have sent with it certificates from F. Honeywood, Esq. and Mr. Richard Appleton, which I hope will be satisfactory, after the Society have seen the machine at work.

I am, Sir,

Your humble servant,

JOSEPH BEARD.

Coggeshall, April 1st, 1805.

CHARLES TAYLOR, Esq.

This machine occupies a space of about fourteen inches square; it is worked by a handle, on the axis of which a small fly-wheel is fixed; it receives two wires at the same time, from two barrels or reels, on each of which a coil of wire is placed; the wires are drawn forward from thence on turning the handle of the machine, they pass through two rollers, and are cut and double crooked as they advance within it; the wires, when properly formed for

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pricking into the leathers, drop down into a receptacle under the machine.

Certificates in favour of the machine were received from Filmer Honeywood, Esq. of Marshall, and Mr. Richard Appleton, of Coggeshall. Mr. Appleton adds, that it is the completest machine in England; has been at work for his use for three weeks, and he has never seen such cards manufactured before; he states, that the advantages of the machine are,

First—The great expedition with which it does the business,

Secondly—The great extent to which it may be employed.

Thirdly—That it does not waste wire as other machines do, on account of its feeding itself, which is a very material advantage to the card-maker.

DEAR.

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DEAR SIR,

WHEN I was in London, I promised you to get information from Yorkshire, respecting the machine you shewed me for cutting and crooking card teeth. My friend informs me there is a machine in use for cutting, and another for crooking, but not any that does both at the same time, and he expresses himself highly gratified to think there is such an invention as that at the Society, which he adds is certain to be of singular utility to manufacturers.

I remain, dear Sir,

Yours truly and sincerely,
MICHAEL NORTON.

*Walness Lodge, near Manchester,
June 25th, 1805.*

To CHARLES TAYLOR, Esq.

The

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The SILVER MEDAL of the Society was this Session voted to Mr. JOHN AUSTIN, of Glasgow, for various IMPROVEMENTS made by him in Manufactures.

The following ACCOUNTS were received from him, and an explanatory ENGRAVING annexed.

Models of the different articles are preserved in the Society's Repository, including, besides those employed in weaving, specimens of the types used in printing, which last are not shown in the engraved Plate.

SIR,

I BEG leave to lay before the Society of Arts, &c. the sundry articles after-mentioned. I have for a series of years exerted myself in endeavouring, by means of these and other inventions in machinery, and various simplifications

tions and improvements of the same, to render the art of weaving more expeditious and less expensive than it has hitherto proved.

It was not till after much trouble and expense, and reiterated experiments, that I at length succeeded beyond my expectation, in answering the purposes intended; and, having met with approbation from manufacturers of the first respectability, and now that they are actually in practical use by tradesmen who find the advantage of them, I beg leave to submit them to the consideration of the Society, in the conviction, that from the models themselves, the certificates produced, and the character these give to my labours, the Society will be satisfied, upon examination, that they have not been entirely useless; and that they will bestow on them their approbation, and promote their encouragement, by such marks of distinction as they may think they merit.

I do

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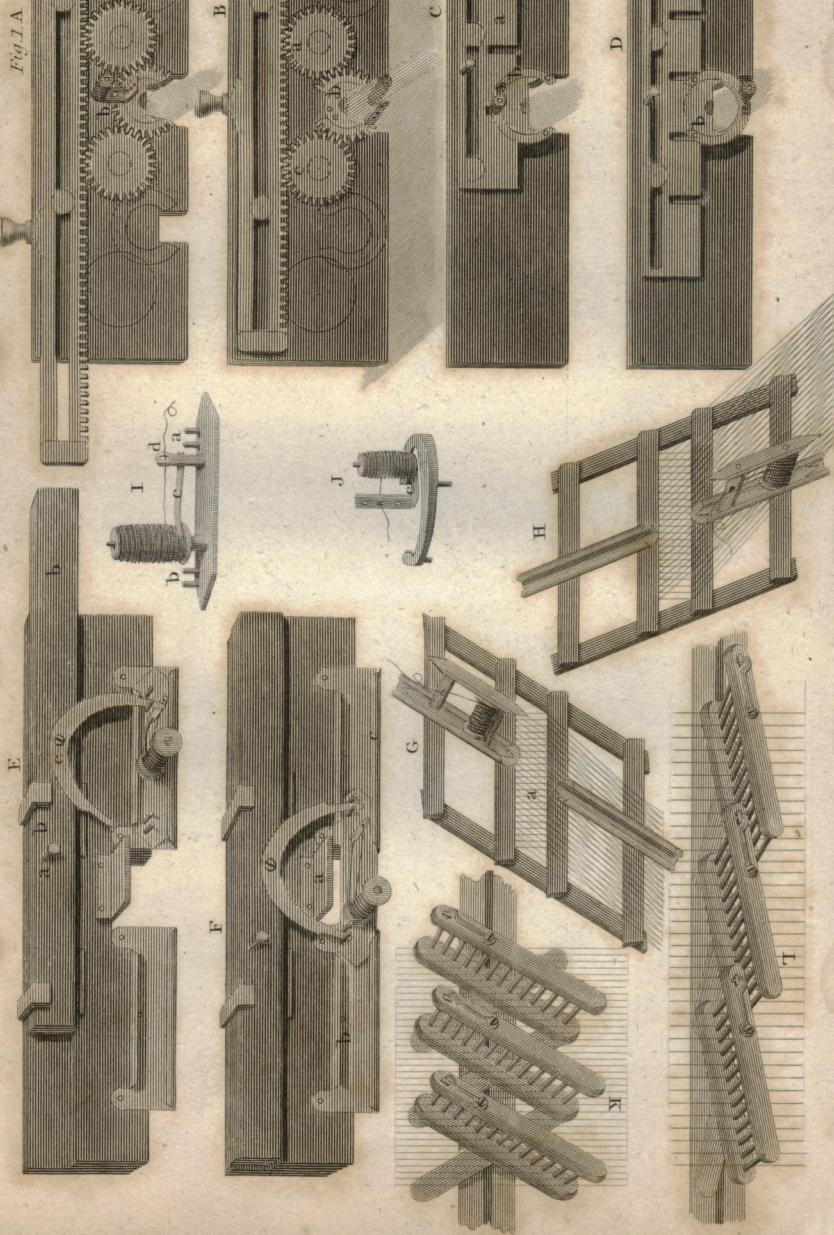
I do not wish it to be understood, as resulting from my own conviction, when I assert that these inventions and improvements will prove useful; or, that I depend upon certificates which have been readily granted by individuals; but upon these, joined to the regard paid by the Chamber of Commerce and Manufactures of Glasgow, of which I have had the honour of being a member from its commencement, and from my having above thirty years practice and experience, in the manufacture of clear lawns, cambric, and gauze; and as being one of three persons who first attempted the muslin manufacture in Scotland, now so eminent, and from study having acquired an intimate acquaintance with that manufacture through all its stages.

The benefits derived from machinery in a manufacturing and commercial country I need not point out. This country enjoys those benefits to an envied

M^r. Austin's Inventions.

Plate A

Fig. 1 A.



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vied degree ; its manufactures are more expeditiously, and less expensively sent to market, enriching the state, and rendering the situation of the meanest mechanic more comfortable.

The spotting shuttles save clipping, and the waste of spotting yarn to nearly seven-eighths of its whole value ; also the pattern is thereby much improved. *Fig. A* and *B* are worked by a single touch of the weaver's finger, although there be one hundred spots in the breadth of the web, and it is done in the same space of time that one of these spots was formerly worked by the weaver, who usually kept a boy on each side of him, each working spot after spot with his fingers; these spots are called brocaded, or finger spots. *Fig. G H* goes obliquely through the shed of the web, and will make any figure of a spot on a plain or twilled mounted web, without spotting hiddles or treadles. *Fig. E F* will answer with
pressers

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pressers to keep down the yarn that is not in the spot, without spotting hiddles or treadles, and other mounting formerly necessary.

The first was invented by me, and communicated by me to Archibald Mac-Vicar, who worked at such things for me, and who reduced it to the form C D.

The *Fig. E F* are improvements on these not yet in common practice.

Fig. K and L is an universal ravel or sniffle, useful at the beaming of all kinds of webs. This machine is of itself complete, and will beam from the coarsest to the finest web, and to any breadth required ; whereas, by those in common use, one hundred and twenty different ones are necessary, the value of which is above £120, and the whole not so complete as one of mine, the expense of which does not amount to above the price of two of the medium value

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value of the common kind; namely, thirty shillings, which the machine-maker who made the first of them supplies them at. Country weavers are often at a great loss for the particular set or kind they want of the old kinds, and have to send many miles to procure one. In manufacturing towns weavers have joint sets of them, although few complete ones, and hire them to those who want them, whereas on my plan every weaver may have one.

I have also sent to the Society, specimens of types or figures, formed of burnt clay or porcelain, for printing patterns upon calicoes, or designs for articles to be sewed or tamboured. These types are not liable to be destroyed by fire, nor by lying in a damp place. They may be made to a certain depth, so as to be varied at pleasure to the taste or fancy, the same as letter-press printing types. A certain number may be marked on each type, to ascertain

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ascertain the exact proportion of the price of tambouring or sewing, the rates of the same work being frequently very irregular for want of a regular standard to calculate them by.

They may be purchased at half, or even one-fourth of those cut in wood; they are equally durable, or more so, and may be made finer than any cut in wood.

I am, respectfully, Sir,
Your obedient servant,
JOHN AUSTIN.

*London, No. 26, Noble-Street, Falcon-Square,
April 17th, 1805.*

To CHARLES TAYLOR, Esq.

**Reference to Mr. Austin's Inventions.—
Plate IV.**

Fig. A, shews the machine or shuttle, for brocading or forming Jamdanna spots, or other designs on muslin, lawn, cambric,

cambric, silk, or other fancy goods, instead of using one spotting shuttle, and afterwards cutting away the yarn to loss, between the spots or figures, as formerly done between every shoot or cast of the shuttle. It is a frame of brass so long as the breadth of the web, the wheels of the size and at the distance required for each spot in the breadth of the web at equal distances. The knob or button of the toothed rack *a* being pushed backwards or forwards until the wheel *b* makes a full revolution with the pirn or bobbin shown at *Fig. J*, which is affixed to the wheel *b* in *Fig. A*, and which coming round under the warp-yarn raised for the spot, brings the yarn of which the spot is wove from the one side of the spot to the other: *c* in *Fig. I*, is a spring made of quill, steel, or brass, to prevent the spotting yarn coming off too quick, which spring, when the pirn is full, presses hard upon the yarn, and gives less pressure as it empties.

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Fig.

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Fig. B is another view of the machine; A with the wheel *b* half turned round, which turns upon a large centre, part of which centre is cut off as represented; and when the communicating wheel *a* is opposite to the vacant part of the wheel *b*, the other wheel *c* turns it round, until a whole revolution is made alternately, and until the design or spot is finished.

Fig. C is another invention for the same purpose, and worked in the same manner with less machinery; there being only three teeth, or round pins in the pinion, which are driven by the rack or slider *a* with deep-cut teeth, as represented in the Engraving.

Fig. D is another view of the last, with the wheel *b* turned half round.

Fig. E and *F* show a third invention for the same purpose: by touching the knob *a*, the slide *b* goes backward and forward, and carries the arch *c* along with it, the two points of which come between

between the two points *a* and *b* of *Fig. I*, which is a small brass shuttle, of which there is one for every spot in the breadth of the web; it carries the spotting yarn through under the warp threads raised about *an inch only*, in place of three inches or more, formerly done for a single shuttle to the whole spots in the breadth of the web.

In *Fig. I*, *c* is the spring above described; *d* is a standard and hole through it answering to the eye of the common shuttle, through which the yarn runs.

In *Fig. F*, *a* is a plate of brass, which, as the slide and arch go along, takes against the inside of the arch, and raises and keeps up that end of the arch; but before that end loses its hold of the shuttle, the other end of the arch is between the other two points *a* and *b* of the shuttle *Fig. I*, at the contrary side of the warp yarn raised for the spot, so that the shuttle is never loose,

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nor can it go out of its proper place, being also confined above and below by two grooves *b* and *c*, *Fig. F.*

In place of spot treadles to raise the warp of the spot, this may be done by pressers, to slide to any distance from the centre, and to keep down such part of the warp as is *not* to be in the spot.

Fig. G and *H* show a fourth method of making spots or figures, and will form any shape or pattern without raising the warp yarn, or having any pressers for that purpose. It consists of a jointed frame, as represented, partly above and partly below the web, which comes through the space *a*, *Fig. G*; and by moving the frame from the angle of *Fig. G* to the angle of *Fig. H*, or to any other angle between them, and while the upper and under shade, or half of the warp is open, you let down or raise up the shuttles, which going through the upper and under shade, according to

to the angle given, will pass through the upper and under shade at different splits or spaces of the reed, and leave the spotting yarn as required in such part of the shade of any web, twilled, striped, checked or plain.

The frames of the machines, *Fig. A, B, C, D, E, F*, are set into two sliders at an angle of about seventy degrees, immediately from before and close to the reed to above the weaver's head, with cords, pullies, and weights, to overbalance and raise them in this direction six to eight inches, and are taken down by the foot with a treadle or pedal, cross, shaft, pullies, and cords.

Fig. G and H may be attached to the batten lay, or swinging frame and reed, or run on casters horizontally backwards and forwards.

Fig. K and L will show a very simple method of beaming webs of any number of half gangs, goes, runners, or equal quantities of warps or chains of yarn,

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putting each division of the warp into each tooth or division of the ravel, sniffle, heck, rake, or frame, for regularly placing the chain or warp of a web on the beam; which when done, all that is necessary is to contract or expand the frame to the breadth of the web required, without paying any regard to the quantity or quality, which in the old way puzzles many good weavers, to calculate and to find one that will suit, as there are about one hundred and twenty different sets or scores, and quarter-scores of the kinds which are made and used as necessary for the purpose, and after all not exact.

Certificates in favour of Mr. Austin's Ravel were received from Mr. William Jameson, jun. Mr. Andrew Stephenson, Mr. Alexander Pollock, and Mr. William Miller; in favour of his printing types,

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types, from Messrs. J. and J. Scott, Mr. Louis Ruffini, Mr. Alexander Patrick, and Mr. John Kirkland, all of Glasgow; and in recommendation of his mode of spotting or brocading muslins in the loom, and his other inventions, from the Directors of the Chamber of Commerce and Manufactures held at Glasgow, June 12, 1804.

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